

What is claimed is:

SUB B ①

A mask for use in a process for curing a photosensitive material, the mask comprising a structure having a top side and a bottom side opposite to the top side, the mask further having a pattern of transparent regions and opaque regions, wherein the opaque regions comprise at least first opaque regions having a first opacity and second opaque regions having a second opacity different from the first opacity.

2. The mask according to Claim 1, wherein the transparent regions and the opaque regions comprise a non-random and repeating pattern.
3. The mask according to Claim 2, wherein the opaque regions comprise a substantially continuous pattern, a substantially semi-continuous pattern, a pattern formed by a plurality of discrete areas, or any combination thereof.
4. The mask according to Claim 2, wherein the first opaque regions and the second opaque regions comprise a non-random and repeating pattern.
5. The mask according to Claim 4, wherein the second opaque regions comprise regions adjacent to the first opaque regions.
6. The mask according to Claim 1, wherein the opaque regions comprise at least third opaque regions having a third opacity intermediate the first opacity and the second opacity.

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7. The mask according to Claim 1, wherein the opaque regions comprise at least one region comprising a gradient opacity that gradually changes in at least one direction.
  8. The mask according to Claim 1, further comprising a pattern of protrusions extending from at least one of the top side and the bottom side of the mask.
  9. The mask according to Claim 8, wherein the pattern of protrusions comprises a substantially continuous pattern, a substantially semi-continuous pattern, a pattern formed by a plurality of discrete protuberances, or any combination thereof.
  10. The mask according to Claim 8, wherein the pattern of protrusions correlates with the pattern of transparent regions and opaque regions to form a combined non-random and repeating pattern.
  11. A mask for use in a process for curing a photosensitive resin, the mask comprising a structure having a top side and a bottom side opposite to the top side, the mask further having a first pattern of transparent regions and opaque regions, and a second pattern of protrusions outwardly extending from at least one of the top side and the bottom side of the mask.
  12. The mask according to Claim 11, wherein the first pattern correlates with the second pattern to form a combined non-random and repeating pattern.

13. The mask according to Claim 12, wherein the opaque regions comprise distal surfaces of the protrusions.
14. The mask according to Claim 11, wherein the first pattern of transparent and opaque regions is independent and separable from the second pattern of protrusions.
15. The mask according to Claim 14, wherein the mask comprises a composite structure formed by at least a first element and a second element juxtaposed therewith, wherein the first element forms the first pattern, and the second element forms the second pattern.
16. A mask, in combination with a source of curing radiation, for use in a process for curing a curable material having a first thickness, the mask comprising a structure having two opposite sides and configured to be positioned between the source of curing radiation and the curable material to selectively shield the curable material from the curing radiation, the mask having a pattern of transparent regions and opaque regions therein, wherein the opaque regions comprise at least first opaque regions and second opaque regions, the first opaque regions having a first opacity, and the second opaque regions having a second opacity less than the first opacity, wherein  
the first opaque regions shields first areas of the curable material from the curing radiation to cause the first regions remain uncured through the first thickness of the curable material,  
the second opaque regions partially shield second areas of the curable material to allow the curing radiation to cure the second areas

of the curable material through a second thickness less than the first thickness, and

the transparent regions leave third areas of the curable material unshielded to allow the curing radiation to cure the third areas of the curable material through the first thickness.

17. A mask, in combination with a source of curing radiation, for use in a process for curing a curable material having a first thickness, the mask comprising a structure having two opposite sides and configured to be positioned between the source of curing radiation and the curable material to selectively shield the curable material from the curing radiation, the mask having a pattern of transparent regions and opaque regions, wherein the opaque regions comprise regions having gradient opacity, gradually changing in at least one direction, to shield selected areas of the curable material from the curing radiation such as to cause said selected areas to cure through a gradually changing thickness.
18. The mask according to Claims 16 or 17, further comprising a pattern of protrusions extending from at least one side of the mask.
19. A process for making a mask for use in a process for curing a photosensitive material, the process comprising steps of:
  - providing a thin transparent material of substantially uniform thickness;
  - forming a pattern of opaque regions in the material according to a predetermined first pattern; and
  - embossing the material according to a predetermined second pattern.

20. The process according to Claim 19, wherein the first pattern substantially correlates with the second pattern to form a combined non-random repeating pattern.
21. The process according to Claim 19, wherein the steps of forming the opaque regions and embossing the material are performed simultaneously.
22. The process according to Claim 19, wherein the step of forming a pattern of opaque regions comprises applying ink to selected regions of the transparent material.
23. The process according to Claim 22, wherein the selected regions comprise distal surfaces of the embossed areas of the material.
24. The process according to Claim 19, wherein the step of providing a thin transparent material comprises providing a transparent film.
25. The process according to Claim 19, wherein the step of forming a pattern of opaque regions comprises forming opaque regions having differential opacities.
26. The process according to Claim 19, wherein the step of forming a pattern of opaque regions comprises forming opaque regions having gradient opacity gradually changing in at least one direction.